Chapter 4
Finalize Data Collection Program (Phase IV)

During Phase IV (see Figure 4-1) of the Technical Project Planning (TPP) process the customer, project manager (PM), and appropriate technical personnel discuss data collection options and finalize a data collection program that best meets the customer's short- and long-term goals for a site. This chapter also offers guidance for documenting the data collection program with a project specific data quality objective (DQO) statement for each data need, final scope of work or work plan, detailed cost estimates, and fact sheet(s).

Communication and interaction with both the customer and the regulator are strongly encouraged during Phase IV efforts.

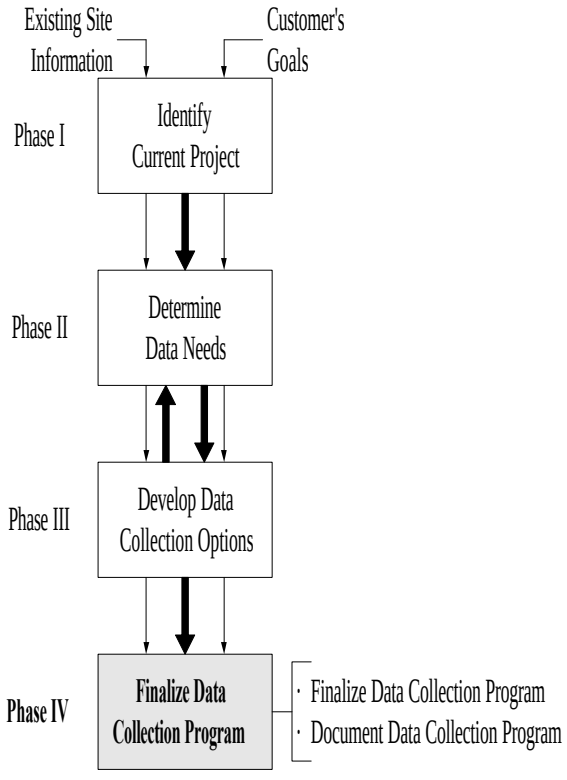

Figure 4-1
Phase IV of Four-Phase TPP Process

This chapter and the entire TPP process supports efforts to prepare project specific DQO statements that meet the definition of a DQO as provided within the U.S. Environmental Protection Agency's 7-Step DQO Process.[1]

4.1 FINALIZE DATA COLLECTION PROGRAM.

The PM, key data users and data implementors, and customer should work together to design the data collection program. In many instances, the customer and PM will also decide to involve the regulators and stakeholders, as appropriate, to design the data collection program. Design of the data collection program will be based on the customer's preferred combination of meeting current project objectives ("basic" data needs), obtaining data cost-effectively for future executable stages ("optimum" data needs), and including any "excessive" data needs the customer chooses to retain.

Finalizing the data collection program requires review of the customer's goals, the project objectives, the intended data uses, the data collection options, and key risk management considerations (e.g., feasibility, cost, schedule, uncertainty, and political concerns).

4.1.1 Prepare Customer Communications.

If the customer was not directly involved in determining the data needs (Phase II) and developing the data collection options (Phase III), then summary information should be provided. The PM should consider utilizing input from both the data users and data implementors to ensure the summary information is precise about both the data needed and the data collection options available. Illustrations representing the site or data

collection activities and flowcharts or decision trees may also be useful when communicating the data collection options and recommendations to the customer.

In some instances, a summary table of data collection options and a series of sampling and analysis planning worksheets, would provide sufficient detail. (Appendix F provides a summary table of data collection options and an example.) However, in most cases, it is more appropriate to add a simple overview description that summarizes the important attributes and characteristics of each option. A well prepared overview supplements a summary table of data collection options and describes potential effects of design decisions on quality, schedule, and cost. Not only will this assist the customer in understanding the benefits and limitations of various data collection options, but it will also provide the basis of subsequent design discussions or presentations.

> The PM and technical personnel should communicate to the customer the uncertainty; cost and technical benefits; and regulatory perspective associated within each data collection option.

4.1.2 Encourage Customer Participation. Efforts to design the data collection program should include obtaining input from the customer. The customer should always be invited and encouraged to participate in design of the data collection program for their site. Regardless of a customer's level of technical expertise related to the site work, the customer's participation at this time will facilitate a design that provides maximum customer satisfaction within the schedule, budget, technical, and regulatory constraints associated with a site.

The PM or an assigned technical team member should lead the team through this sequence of activities to obtain the customer's input and to support the customer's considerations.

- The PM and technical personnel should recommend to the customer the basic data collection option and present all elements of the optimum data collection option.
- The uncertainty, costs, and benefits associated with the basic and optimum data collection options should be explained and discussed. Primary considerations should include schedule, budget, technical constraints, regulatory perspective, and site precedents.
- The PM and technical personnel should present and explain all elements of the excessive data collection option. Technical personnel should be prepared to be responsive to the customer's questions regarding technical details and rationale; cost and schedule implications; and site precedent concerns related to each element of the excessive data collection option. Elements of the excessive data collection option should only be included in the data collection program when explictedly desired by the customer.
- The TPP team should finalize design of the data collection program by combining the customer preferred components of the basic, optimum, and excessive data collection options, as appropriate.

When designing the data collection program with customer input, technical personnel must be sure that the customer understands the effects of any reductions in the number of samples or adjustments to the sampling or analysis methods. Although the customer may initially be satisfied with resulting schedule and cost reductions, the increased uncertainty of the findings may not satisfy the intended data uses

or related project objectives. It is the responsibility of both the PM and the technical personnel to remind the customer of any regulatory requirements, technical constraints, and stakeholder perspectives that should be factored into the customer's decisions.

In some instances, the PM may ask that data users and data implementors re-examine portions of their Phase II and III efforts to fully understand and communicate consequences of refining the data collection program. In other instances, the project objectives corresponding with the current project may need to be revised, or the number of project objectives may need to be reduced or increased depending upon a customer's interests and needs while finalizing design of a data collection program. Changes to grouping of the project objectives should involve some revision to the Phase I Memorandum for Record or the applicable project objective worksheet. Since there is no one correct answer for what belongs in a site's data collection program, a team will typically iterate back into Phase II and Phase III while finalizing design of a data collection program.

4.1.3 Suggest Regulator Participation.
Regulator involvement at this time during the TPP process will enhance acceptance of the final design. Regulator participation in the TPP activities can reduce the number of technical comments received from the regulators, reduce the time expended to plan and execute work, and increase opportunities for the entire team to be flexible and creative in resolving site problems.

After discussions with the customer, but prior to final scoping, regulators should be included in a consensus decision process. However, it is always the customer's decision as to whether or when regulators participate in the TPP process. In order to achieve regulator acceptance of the data collection program, their input and concerns should be considered. Depending upon the customer's preference and experience with the regulators, the customer may be better served by meeting with the regulators after DQOs have been written and provided to the regulators for their review and comment. In any case, regulator desired refinements to the data collection program should ultimately be incorporated only when explicitly agreed to by the customer.

> The Phase I Memorandum for Record, project objective worksheets, data need worksheets, and sampling and analysis planning worksheets can be very useful to the PM, customer, and technical personnel when working with regulators during consensus decision efforts.

4.1.4 Consider Participation of Others.
In many cases, stakeholder interests and concerns can have a significant effect on decisions made by both the customer and regulator at a site. If stakeholders are actively interested in site activities, some level of their participation is likely appropriate during this step in the TPP process. The team may want to offer stakeholders an opportunity to provide written comments regarding site plans. Or the team may consider using some community or public relations techniques and offer a special forum for stakeholders to learn more about the rationale for the planned site activities. The concerns and issues of stakeholders can typically be addressed and managed through a comment and response exchange or by conducting a special meeting tailored to their understanding of the site. However, it remains the customer's decision as to whether, when, and how stakeholders participate in this TPP activity.

4.2 DOCUMENT DATA COLLECTION PROGRAM.

The PM and technical personnel must document the decisions made during the TPP efforts to contribute to institutional knowledge at a site, and for presentation directly in related sampling and analysis plans and work plans. Documentation should include project-specific DQOs, the final scope of work, a detailed cost estimate, and a fact sheet(s) when appropriate.

4.2.1 Prepare Data Quality Objective Statements.

The preparation of DQO statements is a culmination of many of the TPP activities. Similar guidance for preparing DQOs is provided in the U.S. Environmental Protection Agency's (EPA's) 7-Step DQO Process and in American Society of Testing Materials.[1,17] (Appendix E presents a detailed "crosswalk" from EPA's 7-Step DQO Process to the TPP process.) The DQOs become the formal documentation of the data quality requirements. (Appendix F provides a DQO worksheet for documenting the nine data quality requirements of a DQO.) Effective use of DQOs yield data of known quality, documentation of the planning process, and a benchmark to determine if the data meet specified objectives. (Appendix G provides a DQO attainment verification worksheet.)

4.2.1.1 Definition of a DQO.

As defined by EPA, DQOs are *qualitative and quantitative statements derived from the DQO Process that clarify study objectives, define the appropriate type of data, and specify the tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions.* [1]

DQOs produced as a result of the TPP process meet EPA's definition of a DQO. The DQOs documented during this TPP activity should be project-specific statements that describe the intended data use(s), the data need requirements, and the means to achieve them. DQOs documented as a result of the TPP process should be comprehensive and include each of the following data quality requirements.

- **Intended Data Use(s):**
  (1) Project objective(s) satisfied.

- **Data Need Requirements:**
  (2) Data user perspective(s) (i.e., risk, compliance, remedy, or responsibility) satisfied;
  (3) Contaminant or characteristic of interest identified;
  (4) Media of interest identified;
  (5) Required sampling areas or locations and depths identified;
  (6) Number of samples required (e.g., fixed number or dynamic estimate; probabilistic or non-probabilistic basis); and
  (7) Reference concentration of interest or other performance criteria (e.g., action level, compliance standard, decision level, design tolerance) identified.

- **Appropriate Sampling and Analysis Methods:**
  (8) Sampling method (e.g., discrete or composite sample; sampling equipment and technique; quality assurance/quality control samples) identified; and
  (9) Analytical method (e.g., sample preparation, laboratory analysis method detection limit and quantitation limit, laboratory quality assurance/quality control) identified.

4.2.1.2 Team Preparation of DQOs.

A DQO statement should be prepared for each data need within a data collection program. This manual recommends that key data users and data implementors share the responsibility of preparing the DQO statements to ensure each is correct and complete. Technical personnel should find this effort to involve merely compiling the information from the project objective worksheets, the source data need worksheets, and the sampling and analysis planning worksheets. (Appendix F provides several worksheets and tables useful for documenting TPP planning decisions.)

> Even on small projects, DQO statements produced as a result of the TPP process should be reviewed by either project or independent personnel to ensure each DQO is complete and implementable.

4.2.2 Prepare Final Scope of Work or Work Plan.

The PM should consult applicable scope of work (SOW) and work plan guidance, and rely on technical personnel, to prepare and finalize the SOW or work plan for the project. In accordance with applicable guidance, the SOW or work plan must include at least the project objectives, site-specific DQO statements, and the related technical requirements.

4.2.3 Prepare Detailed Cost Estimate.

The PM should coordinate the efforts of various technical personnel to prepare detailed cost estimates for all components of the data collection program. For contracted services, an Independent Government Estimate is required. The PM will find that estimates are best prepared immediately after data collection program design, while technical personnel can easily recall data collection program details. Technical personnel will need to reference other guidance and resources in order to prepare the detailed information and cost estimates for the planned site activities.[18]

4.2.4 Prepare Fact Sheet(s).

The PM and technical personnel's TPP efforts may involve providing the customer with community relations or public affairs assistance to communicate information about the data collection program. Although preparation of DQOs, the project SOW or work plan, and a detailed cost estimate are successful methods of communicating some of the pertinent information to parties involved in site planning and implementation activities, preparation of a fact sheet(s) for presentation to regulators and other interested parties may be necessary or helpful.

In instances where a fact sheet will be prepared for presentation, the TPP team should carefully plan the fact sheet for the receiving audience. Objectives of typical fact sheets include:

- Prepare customer to brief superiors, regulators, other potentially responsible parties, or other stakeholders;
- Negotiate with regulators with, or on behalf, of the customer;
- Inform interested citizens or other parties (e.g.; introduce public to a site; obtain public participation in planning process; establish public concurrence with planned activities; or address public resistance or concerns as a handout at a public meeting or as a direct mail brochure); and
- Provide an outline of key project planning information to include within a site's community relations plan.

The team should consider the potential communication value of some of the following TPP products when planning to prepare a fact sheet:

- Site history and site background information excerpts from the Phase I Memorandum for Record, if confirmed to be accurate;
- Project objective worksheets prepared during Phase I;
- Conceptual site model figures or descriptions, including planned sampling locations;
- Data need worksheets prepared during Phase II;
- Sampling and analysis planning tables prepared during Phase III;
- Site-specific summary tables of data collection options prepared during Phase III;
- DQO statements; and
- Final SOW or work plan.

4.3 COMPLETE PHASE IV ACTIVITIES.

The PM should distribute copies of all data collection program components (e.g., Phase I Memorandum for Record; project objective worksheets; data need worksheets; sampling and analysis planning worksheets; summary tables of data collection options; DQOs; final SOW or work plan; detailed cost estimates; and fact sheets) to the customer and technical personnel, as appropriate. (The customer should decide what TPP components, if any, will be provided to the regulators or stakeholders.) These items will aid preparation and review of subsequent sampling and analysis plans and work plans related to the current project activities.

The PM should also store all the TPP products for the project together for future reference. Many of the TPP products should also be attached to the management plan for the project (e.g., sampling and analysis planning worksheets; DQO statements; final SOW; work plans, and related cost estimates).